How Does Narrative Cue Children's Perspective Taking?

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Three experiments with a total of 120 children between 4 and 9 years of age revealed systematic errors in the recall of deictic terms from a narrative. In some cases, the terms were inconsistent with the perspective of a protagonist. The errors occurred in all age groups and were at the same level whether the protagonist was "good" or "bad" but were less common in a narrative that did not include a protagonist. The pattern of errors suggests that children adopted a perspective within the narrative. Moreover, it seems that whereas the form of the narrative is sufficient to provoke a shift in perspective, children might find it even easier to adopt a perspective when the narrative content is about a protagonist. It thus seems that the form and the content of the narrative (that it is about a person) can combine to give a strong cue to perspective.

It is generally thought that when listening to narrative, people adopt the perspective of the principal protagonist and continue to adhere to this specific point of view (Black, Turner, & Bower, 1979). This is an interesting phenomenon because it demonstrates people's capacity to step outside their own perspective and readily adopt that of another person. Being able to mentally shift to the perspective of a real or imagined person is a highly evolved capacity that is probably confined to one or maybe just a few species (e.g., Povinelli, 1993). Such a capacity might underpin humans' abilities to read the minds of their fellows (Humphreys, 1976) and to pretend (Harris, 2000). Considerable attention has been devoted to studying how children acquire mind-reading skills, with a special focus on the ability to acknowledge false belief (e.g., Wellman, Cross, & Watson, 2001) and on the consequences of being delayed or impaired in this respect (e.g., Baron-Cohen, Leslie, & Frith, 1985; Frith, 2003). Focusing on narrative as a cue to perspective is of special developmental relevance according to theorists who claim that people's understanding of other minds grows out of a linguistic faculty (e.g., de Villiers & de Villiers, 2000; de Villiers & Pyers, 2002) and out of experience with narrative in particular (e.g., Carpendale & Lewis, 2004; Lewis, Freeman, Hagestadt, & Douglas, 1994). It is thus valuable to investigate the origins of an ability to adopt a perspective that is conveyed in narrative.

Narratives typically encourage a certain kind of imaginative perspective taking. One way they do this is through *deixis*, an orientational feature of language. Deictic terms are relative to the time and place of the utterance and help to indicate a point of view.

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Once that point of view is established, it imposes a constraint on further use of deictic terms. C*ome* and *go* are examples of deictic terms of motion: *Come* indicates a move toward the established point of view, and *go* indicates a move away. The usage of *come* and *go* can thus reinforce the locus of a point of view. A study by Black et al. (1979) neatly illustrates that participants are sensitive to the way these terms relate to the established point of view. In that study, participants read short scenarios like the one in the following example:

Bill was sitting in the lounge reading a newspaper,

The narrative then continued to the target sentence, which contained a deictic term that was either consistent with the established point of view, because it described the movement from the perspective of the principal protagonist,

*when John **came** into the room.*

or not consistent with that perspective, because it described a movement from a point not within the room,

*when John **went** into the room.*

Black et al. (1979) found that these perspectively inconsistent deictic terms were read more slowly and were rated as less comprehensible and that participants tended to make systematic recall errors by substituting the consistent version of the verb in recall. Black et al. reasoned that when the presentation is inconsistent, the memory flow might be interrupted to such an extent that the critical deictic term would be recoded in the mental representation of the text in order to maintain a consistent point of view. From this they concluded that the readers' natural stance is to interpret the narrative from a consistent point of view, implying that readers are cued by the narrative to adopt a perspective associated with the principal protagonist.

Very little was known about the development of the ability to take another's perspective in a narrative until Rall and Harris (2000) investigated systematic errors in young children's recall of deictic terms. With the aim of making the task suitably child based, they presented short stories with familiar fairy tale characters. The main fairy tale character was identified in a location at the begin-

ning of the story, and then the narrative described a move by a second character toward that location, either from the point of view of the principal protagonist (consistent) or not from that point of view (inconsistent).

Rall and Harris (2000) found the same recall patterns in 3- and 4-year-old children as Black et al. (1979) had found with adults. Children systematically recalled deictic terms verbatim when they were presented consistently with the point of view of the principal protagonist but made errors in recall when the presentation was not consistent with that point of view, substituting the consistent perspectival term for the inconsistent one. Rall and Harris claimed that children's systematic recall errors revealed that they are competent at adopting a point of view within a described scene. In this context, children, like adults, restructure the story according to the perspective of the principal protagonist. This is somewhat surprising, as children in this age group sometimes show difficulty adopting another's perspective, at least in a perceptually based task (e.g., Piaget's three mountain task: Piaget & Inhelder, 1956) and in some communication tasks (e.g., Mitchell, Robinson, & Thompson, 1999).

Rall and Harris (2000) also considered what features of the narrative might cue perspective. Although acknowledging lower-level interpretations, they focused on the possibility that children had a genuine ability to shift to the perspective of the principal protagonist: "Listeners are inclined to mentally relocate themselves, and if they do so primarily when they have identified the *main protagonist*" [p. 206, italics added], then they might engage in *altercentric participation* (a form of learning by simulation; Bråten, 1998). This would explain why listeners encode not only movement but also such things as characters' emotions (De Vega, León, & Díaz, 1996; Gernsbacher, Goldsmith, & Robertson, 1992). Rall and Harris summed up by suggesting that perspective taking in a narrative is a form of empathic identification with the principal protagonist.

The goals of our investigation were stimulated by Rall and Harris's (2000) provocative conclusion, and they are shown hierarchically in Figure 1. First, we aimed to find out whether children adopt a perspective within the story. Rall and Harris (2000) suggested that this is so, but there is another explanation for systematic substitution errors that needs to be eliminated. Because the stories were based on familiar fairy tales, children might have

recalled the gist from long-term memory. This recall might have influenced how children processed the stories and subsequently reported them back to the experimenter. If so, then children could have been making substitution errors for deictic terms but without adopting a perspective within the story. Therefore, we need to know whether children make substitution errors in connection with novel stories, where intrusion from long-term memory is impossible. We investigated this question in Experiments 1 and 2.

In Experiment 2, we asked whether there might be specific characteristics of protagonists that would make children more or less likely to adopt a perspective within the story. Readers tend to take the perspective of the main protagonist in a story, and we would expect story content to influence which of two characters is identified as the main protagonist. A natural idea is that children (and, perhaps, adults) are more likely to shift perspective when the character seems attractive, because the attractive character is more likely to be the main protagonist. Although it is possible for wicked or otherwise disreputable characters in stories to seem attractive, this is generally thought to be the exception and requires considerable literary skill to bring off. It seems reasonable to suppose that children will generally be more attracted to characters who are presented as good than to characters who are presented as bad, especially when (as was true in our stories) there are no special measures taken to make bad characters seem attractive. If children shift perspective, then doing so should be easier for narratives with a good character than for narratives with a bad character, and therefore systematic recall errors should be more common for a narrative with a good character than for a narrative with a bad character.

It is unclear, though, whether readers or listeners of any age imagine being in the position of the protagonist or whether they merely imagine being in some close spatiotemporal relation to the protagonist. For example, while watching a film in which the principal character is in a boat looking out at the shore, one might adopt an imaginative position within the boat looking in the same direction. But this leaves open the issue of whether one is imagining the scene as if one were in the same position as the character or whether one is imagining being where the focal action is taking place, which might be in close proximity to the character but not in the actual position of the character. One aim of this study was to shed light on this issue.

In Experiment 3, we included stories in which the perspective was not anchored to a protagonist as well as stories that did have a protagonist. A *protagonist* is defined here as a character with his or her own agency; alternatively, a story can center on an entity that may be animated but does not possess its own agency. If participants imagined a perspective from the position of the protagonist, then presumably this would happen only when a protagonist was present. Accordingly, we predicted that the systematic recall errors associated with a perspective shift would be common in relation to a story with a protagonist but absent in relation to one without a protagonist. Alternatively, if children imagine occupying a place within the story where the action is taking place, then this might be easy whether a protagonist is present or absent, in which case the systematic recall errors would be common for both kinds of narrative.
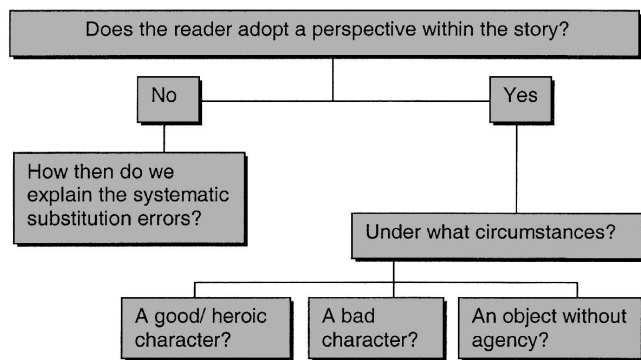

Figure 1. Logical structure of the research question presented in this study.

Experiment 1

This first experiment was an attempt to replicate Rall and Harris's (2000) findings of systematic errors in the recall of deictic terms, but with unfamiliar stories. The stories were structured according to those in the previous study except that we used unfamiliar characters, whom we introduced as two independent agents rather than two related characters.

We set out to conduct this study with the age groups tested by Rall and Harris (2000), namely, 3- and 4-year-old children. However, children of this age were unable to recall any story details and either remained silent or reported back a different story that they had learned on a previous occasion. As a result, we did not pursue testing these age groups further and instead shifted our focus to children who were old enough to recall the unfamiliar stories. Our aim was to discover whether children would make systematic errors in their recall of deictic terms as soon as they were old enough to recall any material from the story. We tested three different age groups with the expectation that systematic recall would be apparent at least by age 7, when children begin to exhibit rather sophisticated skills in perspective taking (e.g., Hulme, Mitchell, & Wood, 2003; Perner & Wimmer, 1985; Taylor, Esbensen, & Bennett, 1994).

Method

Participants. A total of 59 children from state-funded Nottinghamshire schools were tested. The schools were located in predominantly White, low- to middle-income communities. The children were divided into three age groups. The youngest group ranged in age from 4 years 9 months to 5 years 6 months with a mean age of 5 years 2 months (9 boys and 11 girls). The middle group ranged from 5 years 6 months to 6 years 4 months with a mean age of 6 years 0 months (9 boys and 12 girls). The oldest children ranged in age from 7 years 5 months to 9 years 4 months with a mean age of 8 years 3 months (9 boys and 9 girls).

Materials. Children were presented with two short stories containing the terms *come* and *go* (see Appendix A). The structure of the stories was modeled on material used previously (Black et al., 1979; Rall & Harris, 2000). One presentation of each pair was consistent with the character mentioned first, and the other presentation was inconsistent. Each consistent deictic term presentation was followed by an inconsistent one, and vice versa. There were two different orders of presentation, counterbalanced between children: One started with a consistent verb presentation, the other with an inconsistent verb presentation. There were thus four possible conditions for each child depending on which story was told first and whether the first presentation of the deictic term was consistent or inconsistent. Each story included two target sections, that is, sentences containing deictic terms. This number was reduced from the four target sections per story in Rall and Harris's (2000) study as a result of pilot testing the stories on adults. Adults did not show perspectival recall of the terms *bring* and *take,* and the corresponding target sections were therefore removed from the stories. One sentence not containing deictic terms was added to complete each story.

Procedure. All children were tested individually in a quiet room. Exactly the same procedure was followed as in Rall and Harris's (2000) study. At the start of the session, children were told that they would hear two short stories, and they were asked to pay attention. They were then told that they would be asked to tell the story back to the experimenter. Children were also told that the session would be taped and were reassured that only the experimenter would listen to the tape. As in the Rall and Harris study, children were asked to recall each section of story immediately after it was read to them. They were helped with prompts not containing the critical word if they did not recall the sentence spontaneously (e.g., "Now remem-

ber, Laura was sitting in the lounge, looking at a picture book; what happened next?"). When it was apparent that children could not remember a story section, the next section was presented to them. At the end of the session, each child received a sticker as a thank-you gift and a recognition of good performance.

Results

Answers were coded as "verbatim" when the child used the same word as in the presentation, "substitution error" when the child used the opposite term, "neutral" when the state of affairs was expressed without using either of the deictic terms presented, and "null" when the child failed to remember that part of the story or remembered it incorrectly. These four categories of recall are interdependent; for example, if a child made a substitution error in any given instance, then he or she could not also have made a verbatim recall of the deictic term. There were two consistent and two inconsistent verb presentations in the four target sections, and therefore the maximum score in each recall category was 2. Figure 2 shows the mean number of responses as a function of age, presentation consistency, and type of response. The figure illustrates a tendency across all age groups to give verbatim responses when the presentation was consistent and to make substitution errors when the presentation was not consistent.

The data were analyzed with analyses of variance (ANOVAs) for the factors of age group (old, middle, or young) and consistency of presentation (consistent or inconsistent), the last factor being a repeated measure, for each of the four response types. There were main effects for consistency of presentation for verbatim responses, $F(1, 56) = 152.78$, $p < .01$, and substitution errors, $F(1, 56) = 113.50$, $p < .01$, and a significant interaction between consistency and age for both kinds of responses: verbatim responses, $F(2, 56) = 12.90$, $p < .01$; substitution errors, $F(2, 56) = 5.13$, $p < .05$. Neutral and null responses did not show a significant main effect for consistency of verb type or an interaction.

To help interpret the significant interactions, we conducted paired comparisons for the factor of consistency of presentation (consistent vs. inconsistent) for verbatim and substitution error response types in each age group independently. There was a significant difference for consistency of presentation on verbatim responses in the young, middle, and older age groups: $t(19) = 3.27$, $p < .05$; $t(20) = 6.48$, $p < .01$; and $t(17) = 15.84$, $p < .01$, respectively. Likewise, there was a significant difference for consistency of presentation on substitution errors in the three age groups: $t(19) = -4.68$, $p < .01$; $t(20) = -4.99$, $p < .01$; and $t(17) = -9.0$, $p < .01$, respectively.

To cast further light on the significant interactions, we analyzed verbatim responses and substitution errors with one-way ANOVAs for each response category by age group. These revealed a significant difference between age groups for verbatim responses to consistent presentations, $F(2, 58) = 10.13$, $p < .05$, and inconsistent presentations, $F(2, 58) = 4.15$, $p < .05$, and for substitution errors in response to inconsistent presentations, $F(2, 58) = 5.13$, $p < .05$. A Tukey's post hoc test revealed that for verbatim responses, there was a significant difference for consistent presentations between the young and older groups ($p < .05$) and between the middle and older groups ($p < .05$) and for inconsistent presentations between the young and middle groups ($p < .05$). For
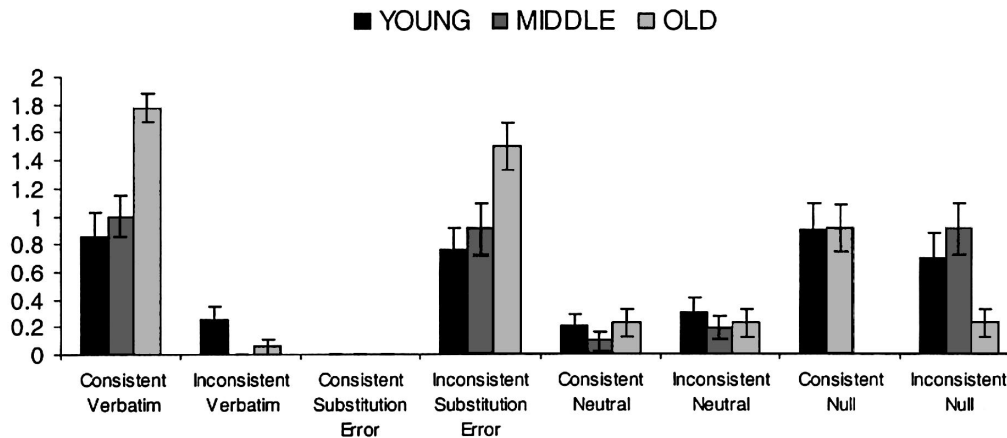
■ YOUNG ■ MIDDLE ☐ OLD

Figure 2. Mean number of responses as a function of age, presentation consistency, and type of response in Experiment 1.

substitution errors, there was a significant difference for inconsistent presentations between the young and older groups ($p < .05$) and between the middle and older groups ($p < .05$).

In summary, children in all three age groups discriminated between sentences in which the deictic term was presented either consistently or inconsistently. Children were more likely to recall the deictic term verbatim when it was consistent with the principal protagonist's point of view than when it was inconsistent. The results for substitution errors mirrored this pattern: Children were more likely to make a substitution error when the deictic term was inconsistent with the principal protagonist's point of view than when it was consistent. The effect was moderated by a significant interaction, which probably reflects improved comprehension with increasing age. This was evident in a pattern where recall got better for consistent terms but worse for terms that were inconsistent with the protagonist's perspective, highlighting the strength of the effect that word use had on perspectival comprehension.

Discussion

The results replicated those of Rall and Harris (2000) and show that their findings extend to novel characters and stories. In these stories, children's distinctive pattern of recall, especially their systematic errors, suggested that they shifted perspective. The effect thus proved to have a broad scope and seems robust. The current findings have a special value in that it would be impossible to explain systematic errors of recall by saying that the children were importing details from long-term memory. This explanation works only for stories that are familiar to children. Therefore, we are left with the interesting possibility that children's systematic errors of recall were a sign that they had adopted a perspective within the story.

Experiment 2

If children adopt the perspective of a character in a narrative, then doing so might be difficult if the character is unattractive, as would be the case when the character is depicted as being "bad"; that is, children might be reluctant to imagine the world from the point of view of an unattractive character. Alternatively, shifting to

a perspective in the story might actually be something that happens automatically as a product of the normal process of comprehension. In that case, there would be signs of perspective shift so long as there were signs of comprehension, irrespective of whether the protagonist or any other aspect of story content was depicted as "good" or "bad." Experiment 2 was designed to shed light on this matter: If it is easier for children to shift perspective for an attractive protagonist, then systematic recall errors should be more common for a narrative with a "good" protagonist than for one with a "bad" protagonist.

Method

Participants. In the previous experiment, we established that children seemed proficient in recalling story details from about the age of 4 years and that from this age onward, they show signs of adopting perspective. Therefore, we concentrated on children 4 and 5 years old as a suitable population for testing the hypothesis of Experiment 2. A total of 33 children from state-funded Nottinghamshire schools participated, ranging in age from 4 years 9 months to 5 years 11 months with a mean age of 5 years 3 months (15 boys and 18 girls). The schools were located in predominantly White, low- to middle-income communities.

Materials, design, and procedure. Children were presented with two short stories. The stories had two versions; one mentioned the good character first, the other the bad character. Each story had four target sections containing presentations of *come* and *go* that were consistent with the perspective of the character mentioned first on two occasions and not consistent with it on the other two occasions (see Appendix B for a target section of one of the stories). The number of target sections was increased from that in Experiment 1 to provide more opportunities to demonstrate systematic errors in recall. This would increase the sensitivity of the experiment and thereby help to detect any subtle effect associated with the character of the protagonist (good or bad). The order of the consistent and inconsistent presentations and the presentation of the good or bad character first were counterbalanced. The procedure was identical to that in Experiment 1.

Results

The coding scheme was the same as in Experiment 1. There were four consistent and four inconsistent presentations in eight target sections, yielding a maximum score of 4 in each recall

category. The data from 4 children were incomplete and therefore excluded. The data were analyzed in four 2×2 ANOVAs, one for each response type. The factors were story type (good or bad) and consistency of presentation (consistent or inconsistent), and both factors were repeated measures. For verbatim responses, there was a significant main effect for consistency of presentation, $F(1, 28) = 14.58$, $p < .01$, but not for story type, $F(1, 28) = 1.77$, ns, and no significant interaction, $F(1, 28) = 0.00$, ns. For substitution errors, there was a significant main effect for consistency of presentation, $F(1, 28) = 16.61$, $p < .01$, but not for story type, $F(1, 28) = .02$, ns, and no significant interaction, $F(1, 28) = .30$, ns. There were no significant effects from the ANOVAs on neutral and null responses.

To confirm directly that children adopted the perspective of an unattractive as well as an attractive character, we conducted paired comparisons between consistent and inconsistent presentations for each type of story. Verbatim responses were more common for consistent than for inconsistent presentations in stories with a good character, $t(28) = 2.86$, $p < .05$, and in those with a bad character, $t(28) = 3.55$, $p < .05$. An analogous set of analyses based on substitution errors corroborated these findings: $t(28) = -3.82$, $p < .05$ and $t(28) = -2.28$, $p < .05$, respectively. Figure 3 displays the mean number of responses as a function of story type, presentation consistency, and type of response. The figure shows a tendency for children to give verbatim responses when the presentation was consistent and to make substitution errors when it was not consistent; this was apparent for both types of story.

Discussion

The pattern of children's recall of deictic terms was the same whether the story centered on an attractive or an unattractive character. Children's tendency to shift perspective therefore seems highly robust, raising the possibility that it is an inevitable consequence of comprehension of this type of narrative.

Experiment 3

Although children seem to be easily able to shift perspective, we still do not know precisely what kind of shift occurs in these circumstances. Do children imagine being in the position of the protagonist, or do they merely imagine being in proximity to the protagonist? To find out, in Experiment 3 we included some narratives that had a principal protagonist and some that did not. If participants' perspective shift was to the position of the principal protagonist, then presumably this could occur only when a principal protagonist was present. Alternatively, if children merely shifted perspective to where the action was taking place in the story, then doing so might be easy whether a principal protagonist was present or absent. Accordingly, we need to know whether systematic recall errors are confined specifically to narratives that have a principal protagonist or whether they are equally common for narratives with and without a principal protagonist.

Method

Participants. A total of 28 children (14 boys and 14 girls) from state-funded Nottinghamshire schools participated. The schools were located in predominantly White, low- to middle-income communities. The children were divided into two age groups of 14 children each. The younger children ranged in age from 5 years 0 months to 6 years 4 months with a mean age of 5 years 3 months, and the older children's ages ranged from 6 years 5 months to 7 years 6 months with a mean age of 7 years 0 months. These children were from two school grades and had parental consent to take part in this study.

Materials, design, and procedure. The aim was to investigate children's systematic recall errors from narratives with and without a principal protagonist. As the design thus doubled in scale, more stories were needed. Children were presented with four short stories containing the terms *come* and *go*. Two of the stories containing protagonists were slightly adapted versions from Experiment 1. A further two analogous stories were created that were centered on an entity not possessing agency. (See Appendix C for examples of agency and nonagency stories.) The procedure was the same as in Experiments 1 and 2. The factors were the same as in Experiment 2
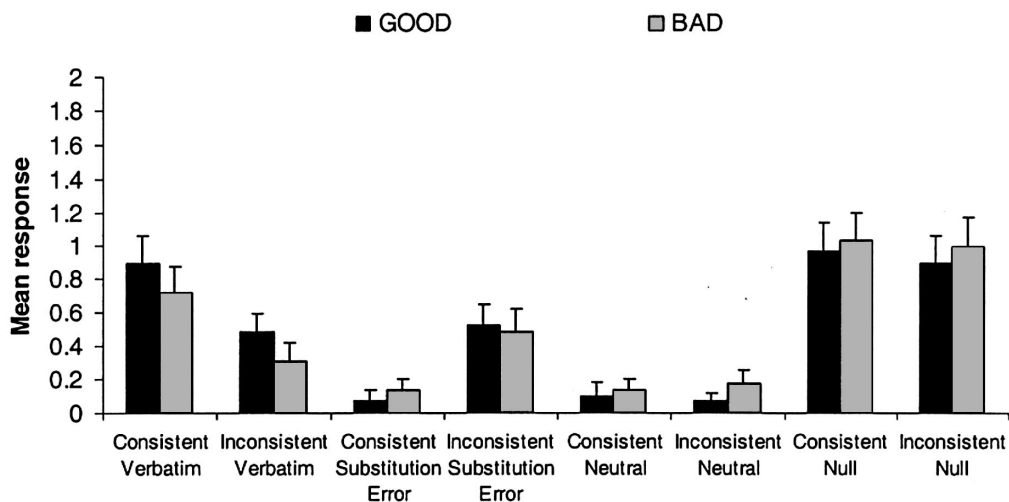

Figure 3. Mean number of responses as a function of presentation consistency, story type, and type of response in Experiment 2.

except that the factor of good or bad character was replaced with the agency/nonagency factor.

The stories used in the two conditions were similar in relevant respects: Both story types began by depicting the activity (tapping feet or spinning) of a focal entity either with or without agency located in a room, which was followed by a secondary protagonist moving into the same room. Subsequently, the focal entity moved out of the room. Some details that we assumed were less relevant differed between stories, such as the setting, the names of protagonists, and so on. These differences in minor detail served to convey to children that each task was unique, thereby allowing us to present a repeated measures design, as in Experiment 2. This would allow high sensitivity for detecting any differences between conditions.

Note that when children attempted to recall deictic terms in relation to the movement of the nonagency object, they had not yet reached the part of the story that offered an explanation of what caused the object's movements. Hence, although the reader or listener ultimately discovered that the object was controlled by an agent, this fact had not been disclosed at the time children made their recall.

Results

There were two consistent and two inconsistent presentations in four target sections, and therefore the maximum score in each recall category was 2. The same coding scheme was employed as before. The data were analyzed in four $2 \times 2 \times 2$ ANOVAs, one for each response type. The factors were age group (young or old), consistency of presentation (consistent or inconsistent), and story type (agency or nonagency), and the last two factors were repeated measures.

There was a significant main effect for consistency of presentation of verbatim responses, $F(1, 29) = 20.50$, $p < .01$, and substitution errors, $F(1, 29) = 34.80$, $p < .01$, and a significant interaction between consistency and story type for both kinds of response: verbatim responses, $F(1, 29) = 5.44$, $p < .05$; substitution errors, $F(1, 29) = 10.631$, $p < .01$. There was a significant main effect associated with story type for substitution errors, $F(1, 29) = 5.58$, $p < .05$, but not for verbatim responses, $F(1, 29) = 2.59$, ns. No other effects were associated with these two kinds of response. There were no significant effects associated with either

of the remaining two kinds of response. Figure 4 shows the mean number of responses as a function of story type, consistency of presentation, and type of response.

Combining the two age groups, we conducted a series of post hoc analyses to help interpret the significant interactions. In agency stories that centered on a protagonist, children were more likely to recall the deictic term verbatim in consistent sentences than in inconsistent sentences, $t(29) = 5.49$, $p < .01$. Conversely, they were less likely to make substitution errors in consistent sentences than in inconsistent sentences, $t(29) = -6.18$, $p < .01$. The same effects emerged independently in nonagency stories: verbatim responses, $t(29) = 2.09$, $p < .05$; substitution errors, $t(29) = -4.01$, $p < .01$. Therefore, it seems that children's relocation of perspective to a place in the narrative is not dependent on the presence of a principal protagonist.

We continued the post hoc analysis by conducting a comparison between the two story types for consistent and inconsistent sentences independently. For inconsistent sentences, children were less likely to recall the deictic term verbatim in agency stories that included a principal protagonist than in nonagency stories, $t(29) = -3.53$; $p < .01$. Conversely, children were more likely to make substitution errors in agency stories that included a principal protagonist than in nonagency stories, $t(29) = 3.03$, $p < .05$. In summary, as suggested by Figure 4, the significant interaction can be interpreted thus: Although children relocated their perspective to a place within the narrative in both kinds of story, the tendency to do so was stronger in the story that included a principal protagonist than in the story that centered on an object that lacked agency.

Discussion

The results of Experiment 3 shed light on the quality of children's shift in perspective. We questioned whether they shifted to the position of the protagonist or shifted more generally to a place within the story where the action was happening. If their shift were necessarily to the position of the principal protagonist, then of
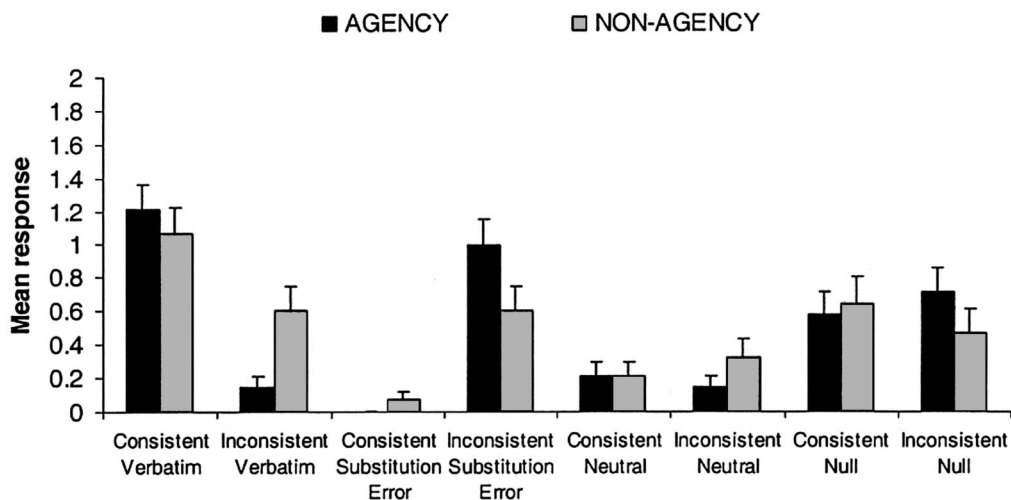

Figure 4. Mean number of responses as a function of presentation consistency, story type, and type of response in Experiment 3.

course this would be impossible when such a protagonist (at least one with agency) was absent. Interestingly, the results speak to this issue in a rather subtle way. On the one hand, the systematic recall errors suggest that there was a shift of perspective even for stories that lacked a principal protagonist. On the other hand, the signs that a shift had occurred were more abundant when a principal protagonist was present.

Because the stories used in this experiment for the agency and nonagency conditions differed in minor ways, it is possible that the differences observed between the conditions were due not to the factor of agency but to these small story differences. However, given the robustness of the recall patterns for all stories used in the three experiments reported here, it seems unlikely that small differences between stories could cause the observed systematic effect.

If children's shift in perspective could only be to the perspective of a protagonist that had agency, then how can we explain the results of Experiment 3? One possibility is that children perceived the focal objects to have agency even in the nonagency conditions. The difference in results between agency and nonagency conditions could then be explained as a difference in the likelihood that children would assign agency to the subject of the story. In the agency stories, it would be relatively easy to assign agency, whereas in the nonagency stories, it would be difficult but perhaps not impossible. Intuitively, though, it seems rather improbable that children would imaginatively shift to the perspective of a car, unless the car was anthropomorphized (which it was not). Nevertheless, perhaps children interpreted the movement of the car as a sign that it did indeed have its own agency. In the light of that possibility, it would be worth investigating whether children shift perspective when the story is about an object that not only lacks agency but is also completely motionless.

That said, the more straightforward explanation of the results seems to be that children can adopt a perspective within the story whether or not the story is about a protagonist with agency—with the qualification that shifting is easier when a protagonist is present. An implication would be that if children shift perspective in a story that lacks a protagonist, then they are shifting to a position where the action is happening; evidently, they could not be imaginatively identifying with a protagonist in this case.

General Discussion

In these three experiments, we demonstrated systematic deictic recall errors in children 4 to 9 years of age. It might have been possible to explain recall errors in Rall and Harris's (2000) study without positing that children adopted a perspective by suggesting instead that their prior exposure to the familiar fairy tales influenced both processing and recall. Our findings across all three experiments cannot be explained in this way because our stories were novel to the participants.

Experiment 2 showed that stories containing prototypically good and bad protagonists provoked equally strong tendencies to adopt a perspective. Accounts of perspective shifting in response to stories have generally assumed that the reason for the shift is that it assists with, and may even be necessary for, understanding the structure of the story itself. An unexplored possibility is that perspective shifting is at least partly an expression of empathic association with a protagonist. The results of Experiment 2 lend no

support to this second explanation, because the tendency to shift and the location shifted to were unaffected by the attractiveness—and hence by the empathic appeal—of the character concerned. In addition, the findings of Experiment 2 demonstrate that the perspective shift is robust across a variety of stories with differences in detail and content.

Just because children seemed to adopt a perspective within the story, it does not necessarily follow that they adopted the perspective from the position of the protagonist. The findings from Experiment 3 suggested that children could adopt a perspective even though a principal protagonist with agency had not been introduced. In this case, a shift in perspective might have been cued by the form of the story, perhaps as a natural product of comprehension. However, the evidence suggesting that children had adopted a perspective was stronger when the narrative did contain a principal protagonist. Therefore, it seems that although the adoption of a perspective does not depend on there being a principal protagonist, it is certainly facilitated by one.

Theorists have argued that the primary function of simulation is to allow people to step into the shoes of another agent, to see and think about the world as the agent sees and thinks about it, so that they will be better able to explain and predict the agent's behavior (Humphreys, 1976). In the present context, simulation would involve projecting oneself imaginatively into the space of the story, perhaps identifying with a story character. If theorists are correct in their assertion that simulation evolved as a means of mind reading, one would expect that it would be easiest and most natural in a context in which there was another agent whose position one could adopt in imagination. So if children used mental simulation to relocate themselves within the imaginary space created by the narrative, we would expect this to be easier when the space was occupied by a protagonist, rather than by an entity without agency. The results of Experiment 3 lend support to this possibility.

With regard to future research, the paradigm we devised for Experiment 3 could be used in order to trace different courses of development. It might be that some groups of children have an aberrant developmental trajectory, relying too much or too little on form in their adoption of a perspective. For example, perhaps individuals with autism would show the classic recall errors irrespective of whether the story did or did not contain a protagonist with agency. That is, perhaps including such a protagonist in a story would not help such individuals above and beyond what they could achieve purely from the form of the narrative. This situation would occur in a population whose ability to process form was intact but whose capacity for empathic identification was underdeveloped or impaired (cf. Hulme et al., 2003).

We end by noting that the hypotheses we have explored in this article are not the only possible ones. We have assumed that children engage with the narrative by imagining themselves to be within the space of the action. A more radical approach would question the idea that the child undertakes any imaginative shift at all. How, if the child was not undertaking any such imaginative shift, would we explain the observed patterns of response to *came* and *went* found in our experiments and elsewhere? After all, one's choice of *came* in preference to *went* reflects one's own position: "He came into our house" indicates that the speaker was present in the house at the time. However, it is important to distinguish between what is represented in imagination and the vehicle of representation, in this case, a mental image. Suppose that the child,

on hearing the story, forms a mental image of the scene. That mental image must be an image from a point of view. It may be a point of view within a room, and the child may then imagine the protagonist entering that room. It would surely be natural for the child to favor the description "he came into the room" rather than the description "he went into the room." But it might be argued that this does not tell us that the child imagines being in the room.

We need to distinguish between the point of view of the child's image and the point of view, if any, that the child imagines adopting. It is possible to imagine a scene, and to imagine it from a point of view, without imagining that one is at that point of view. This provides a solution to the famous puzzle of the unseen tree: How can one have a mental image of an unseen tree? The answer, according to the theory we are considering, is that one imagines the tree and, in doing so, imagines it from a certain point of view. But it is no part of what one imagines that one is at that position.

This theory might account for such results as the perceived naturalness of *came* over *went* in our experiments and in those of others: The explanation is that one forms an image of the scene, and the natural-seeming deictic expression is one that is consistent with the perspective of the image, even though one does not imagine oneself occupying that perspective. However, it is currently a matter of philosophical dispute as to whether this account of imagery is defensible (for contrasting opinions, see Martin, 2002; Noordhof, 2002; Peacocke, 1985; and Williams, 1973). Further experimental work may help to break the conceptual deadlock, which we reserve for another occasion.

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Appendix A

Stories Used in Experiment 1

The deictic pairs are italicized. Only one member of each pair was presented to the child per section; one was consistent with and one was inconsistent with the perspective of the character mentioned first.

Story 1

1. Laura was sitting in the lounge looking at a picture book when Tony *came*/*went* into the room and asked whether she would like to go outside and play ball.

2. Laura got up from her chair in the lounge and *came*/*went* into Tony's room to pick up a ball to play with.

3. Laura and Tony had fun playing with the ball in the sunny garden.

Story 2

1. Kate was sitting on a chair in the living room next to the fireplace and was dreaming about going horse riding with her friends, when David *came*/*went* into the room. Kate was very surprised to see him.

2. David needed some apples for the horses, so Kate got up from her chair and *came*/*went* into the kitchen to look for some apples.

3. The horses really liked the apples and were munching them noisily.

Appendix B

Target Section of One of the Stories Used in Experiment 2

One term of the italicized deictic pair was presented to each child. Two of the presentations were consistent with the perspective of the character mentioned first, and two were not.

Good Character First

1. The prince was hiding behind the door when a horrible ghost *came/went* into the room.

2. The prince quickly jumped up and *came/went* into the corridor.

3. The prince was hiding behind a curtain in the corridor when the ghost *came/went* around the corner.

4. The prince waited until the ghost had passed and then *came/went* to the staircase.

Bad Character First

1. The ghost was hiding behind the door when a young prince *came/went* into the room.

2. The ghost quickly jumped up and *came/went* into the corridor.

3. The ghost was hiding behind a curtain in the corridor when the prince *came/went* around the corner.

4. The ghost waited until the prince passed and then *came/went* to the staircase.

Appendix C

Examples of Agency and Nonagency Stories Used in Experiment 3

Agency Story

1. Laura was sitting in the lounge tapping her feet on the floor when Tony *came/went* into the room and asked whether she would like to go outside and play ball.

2. Laura got up from her chair and *came/went* into Tony's room to pick up a ball to play with.

3. Laura and Tony had fun playing with the ball in the sunny garden.

Nonagency Story

1. The toy car was reversing fast and started spinning in the middle of the kitchen floor, when Julia *came/went* into the room.

2. The car stopped spinning and *came/went* into the lounge at high speed.

3. Julia was very surprised until she saw Bob with the remote control.